Supporting file 2

These topographic maps and graphs reveal substantial variability in brain activity across subjects, complicating the visual identification of consistent patterns. This variability prompted the exploration of multiple approaches to enhance classification accuracy.

Schizophrenia

Figure ts01. Topographic arrow map for s01

Figure gs01. Average connectivity for subject s01

Figure ts02. Topographic arrow map for s02

Figure gs02. Average connectivity for subject s02

Figure ts03. Topographic arrow map for s03

Figure gs03. Average connectivity for subject s03

Figure ts04. Topographic arrow map for s04

Figure gs04. Average connectivity for subject s04

Figure ts05. Topographic arrow map for s05

Figure gs05. Average connectivity for subject s05

Figure ts06. Topographic arrow map for s06

Figure gs06. Average connectivity for subject s06

Figure ts07. Topographic arrow map for s07

Figure gs07. Average connectivity for subject s07

Figure ts08. Topographic arrow map for s08

Figure gs08. Average connectivity for subject s08

Figure ts09. Topographic arrow map for s09

Figure gs09. Average connectivity for subject s09

Figure ts10. Topographic arrow map for s10

Figure gs10. Average connectivity for subject s10

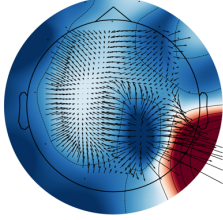Figure ts11. Topographic arrow map for s11

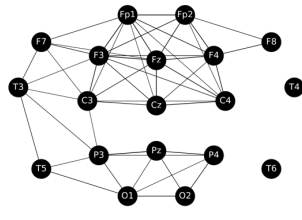Figure gs11. Average connectivity for subject s11
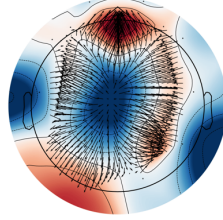
Figure ts12. Topographic arrow map for s12

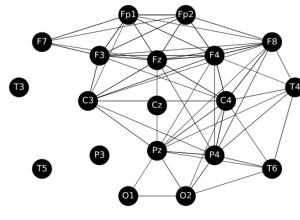Figure gs12. Average connectivity for subject s12
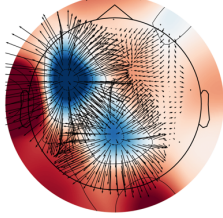
Figure ts13. Topographic arrow map for s13
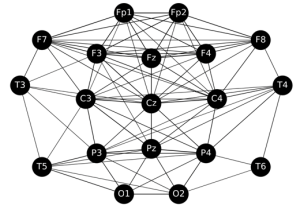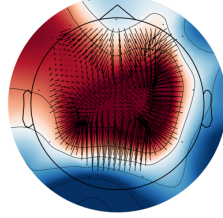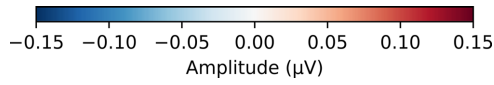
Figure gs13. Average connectivity for subject s13
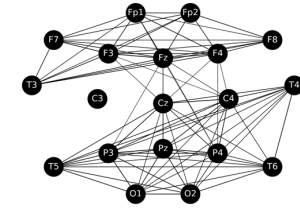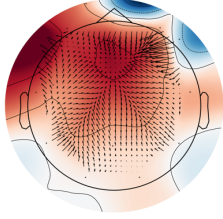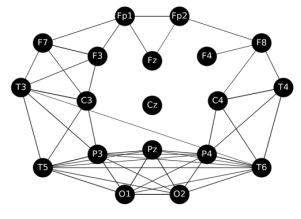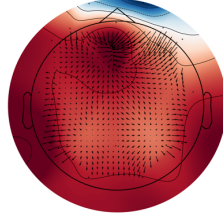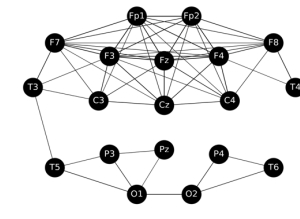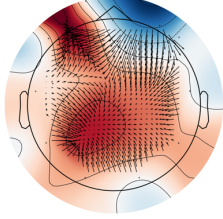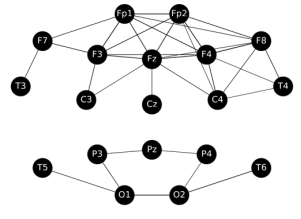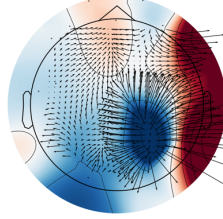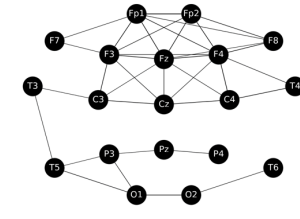
Figure ts14. Topographic arrow map for s14

Figure gs14. Average connectivity for subject s14

Amplitude (μV)

−0.15 −0.10 −0.05 0.00 0.05 0.10 0.15

Control (PS dataset)

Figure th01. Topographic arrow map for h01

Figure gh01. Average connectivity for subject h01

Figure th02. Topographic arrow map for h02

Figure gh02. Average connectivity for subject h02

Figure th03. Topographic arrow map for h03

Figure gh03. Average connectivity for subject h03

Figure th04. Topographic arrow map for h04

Figure gh04. Average connectivity for subject h04

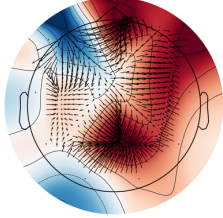Figure th05. Topographic arrow map for h05

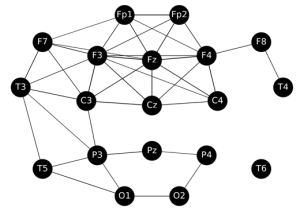Figure gh05. Average connectivity for subject h05

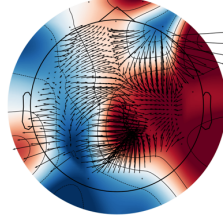Figure th06. Topographic arrow map for h06
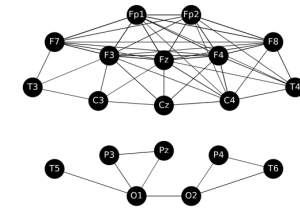
Figure gh06. Average connectivity for subject h06

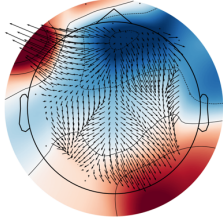Figure th07. Topographic arrow map for h07

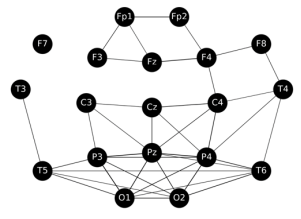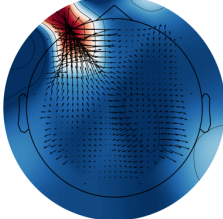Figure gh07. Average connectivity for subject h07

Figure th08. Topographic arrow map for h08

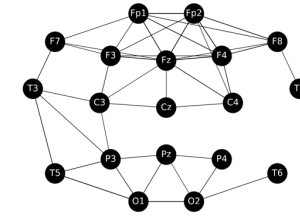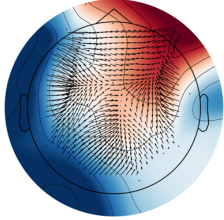Figure gh08. Average connectivity for subject h08

Figure th09. Topographic arrow map for h09

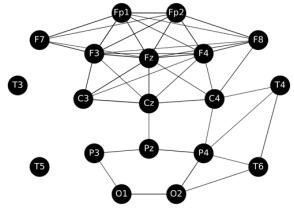Figure gh09. Average connectivity for subject h09
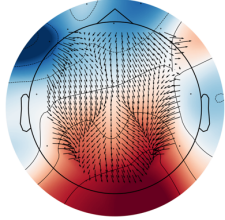
Figure th10. Topographic arrow map for h10

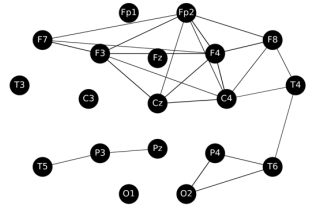Figure gh10. Average connectivity for subject h10

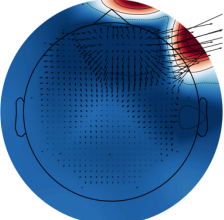Figure th11. Topographic arrow map for h11

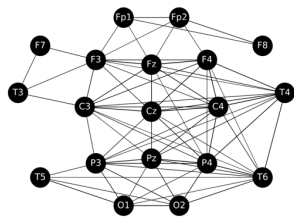Figure gh11. Average connectivity for subject h11
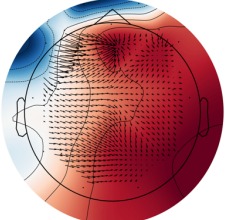
Figure th12. Topographic arrow map for h12

Figure gh12. Average connectivity for subject h12

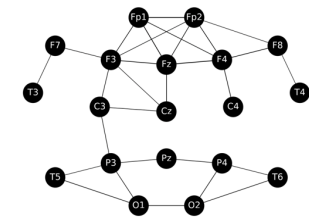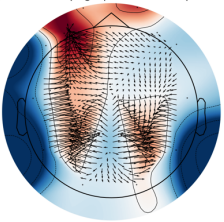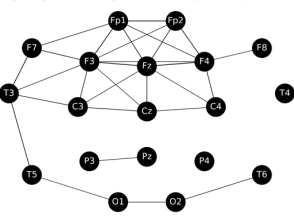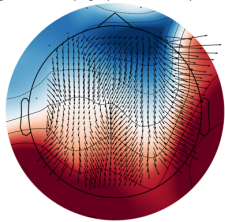Figure th13. Topographic arrow map for h13

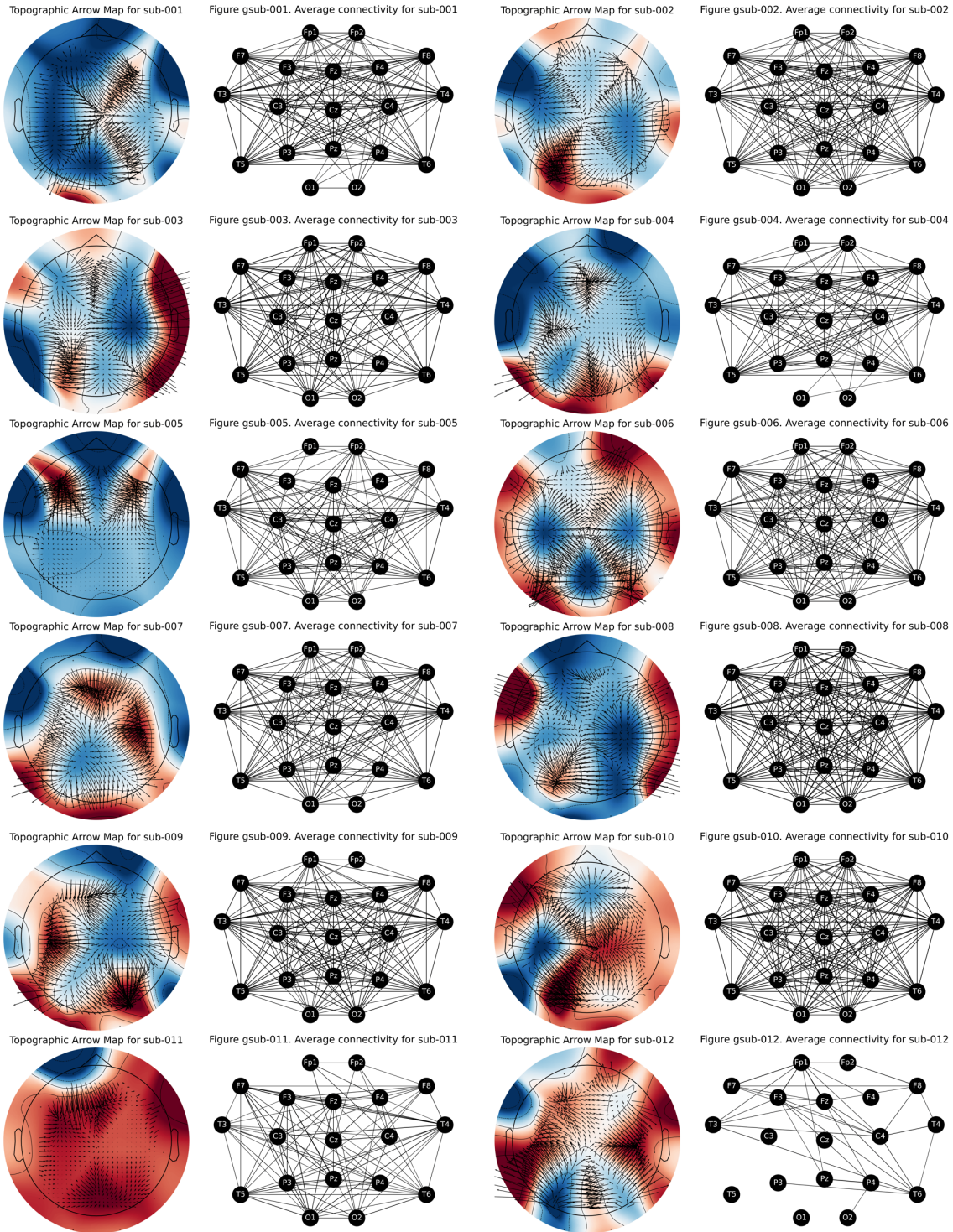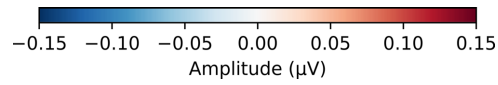Figure gh13. Average connectivity for subject h13

Figure th14. Topographic arrow map for h14

Figure gh14. Average connectivity for subject h14

III

Alzheimer's Disease

Amplitude (µV)
−0.15 −0.10 −0.05 0.00 0.05 0.10 0.15

Topographic Arrow Map for sub-001

Figure gsub-001. Average connectivity for sub-001

Topographic Arrow Map for sub-002

Figure gsub-002. Average connectivity for sub-002
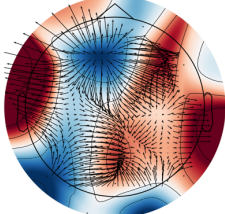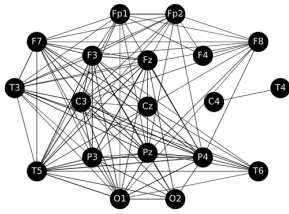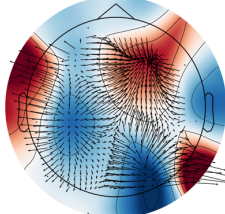
Topographic Arrow Map for sub-003

Figure gsub-003. Average connectivity for sub-003
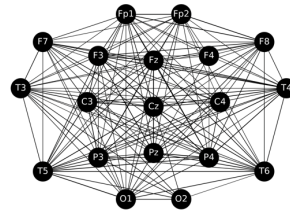
Topographic Arrow Map for sub-004

Figure gsub-004. Average connectivity for sub-004
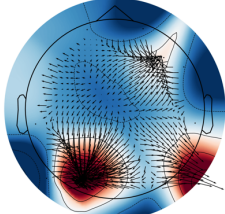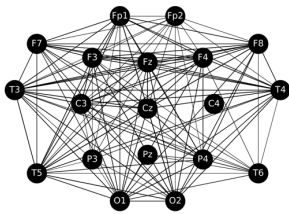
Topographic Arrow Map for sub-005

Figure gsub-005. Average connectivity for sub-005
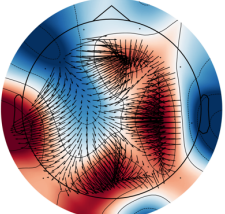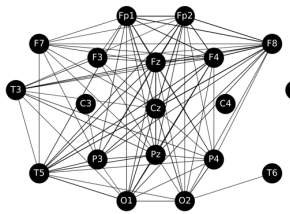
Topographic Arrow Map for sub-006

Figure gsub-006. Average connectivity for sub-006
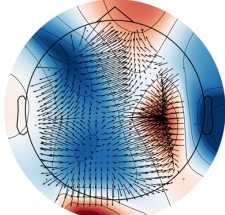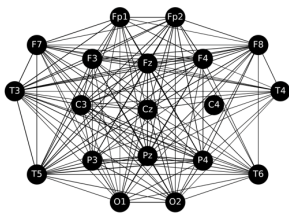
Topographic Arrow Map for sub-007

Figure gsub-007. Average connectivity for sub-007

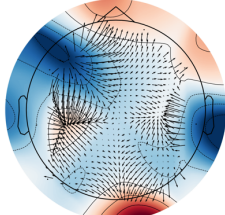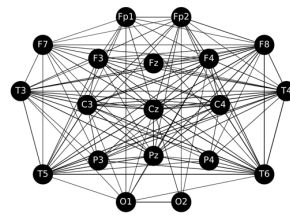Topographic Arrow Map for sub-008

Figure gsub-008. Average connectivity for sub-008
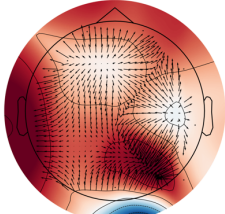
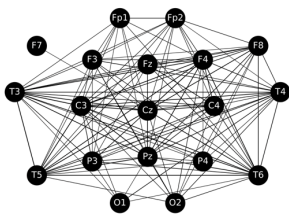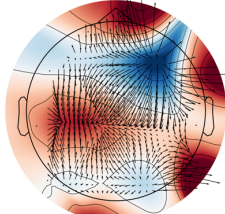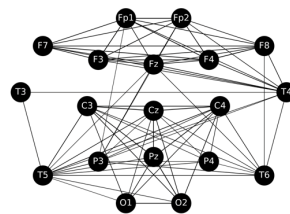Topographic Arrow Map for sub-009

Figure gsub-009. Average connectivity for sub-009

Topographic Arrow Map for sub-010

Figure gsub-010. Average connectivity for sub-010
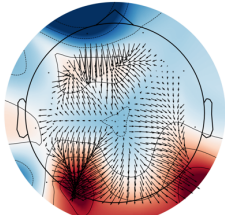
Topographic Arrow Map for sub-011

Figure gsub-011. Average connectivity for sub-011

Topographic Arrow Map for sub-012

Figure gsub-012. Average connectivity for sub-012
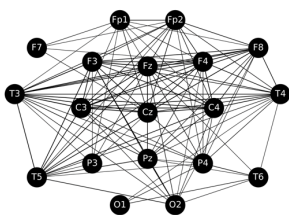
IV

Topographic Arrow Map for sub-013

Figure gsub-013. Average connectivity for sub-013

Topographic Arrow Map for sub-014

Figure gsub-014. Average connectivity for sub-014

Topographic Arrow Map for sub-015

Figure gsub-015. Average connectivity for sub-015

Topographic Arrow Map for sub-016

Figure gsub-016. Average connectivity for sub-016

Topographic Arrow Map for sub-017

Figure gsub-017. Average connectivity for sub-017

Topographic Arrow Map for sub-018

Figure gsub-018. Average connectivity for sub-018

Topographic Arrow Map for sub-019

Figure gsub-019. Average connectivity for sub-019

Topographic Arrow Map for sub-020

Figure gsub-020. Average connectivity for sub-020

Topographic Arrow Map for sub-021

Figure gsub-021. Average connectivity for sub-021
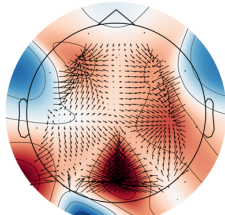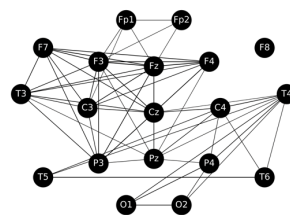
Topographic Arrow Map for sub-022

Figure gsub-022. Average connectivity for sub-022

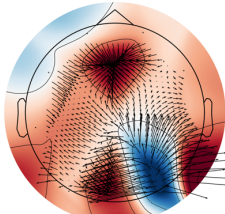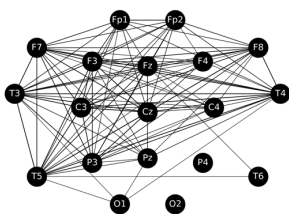Topographic Arrow Map for sub-023

Figure gsub-023. Average connectivity for sub-023
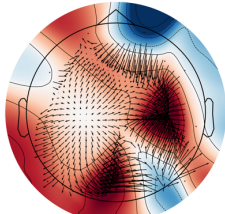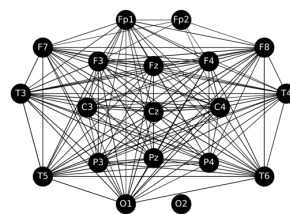
Topographic Arrow Map for sub-024

Figure gsub-024. Average connectivity for sub-024
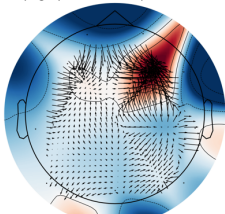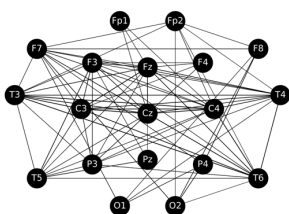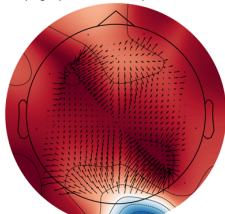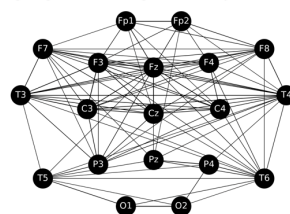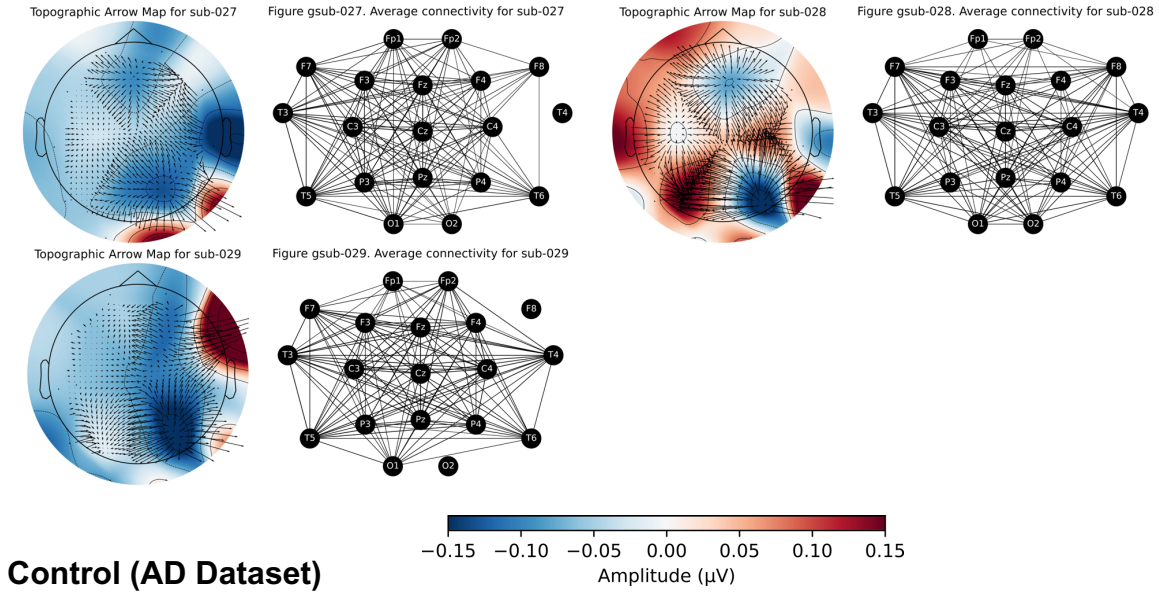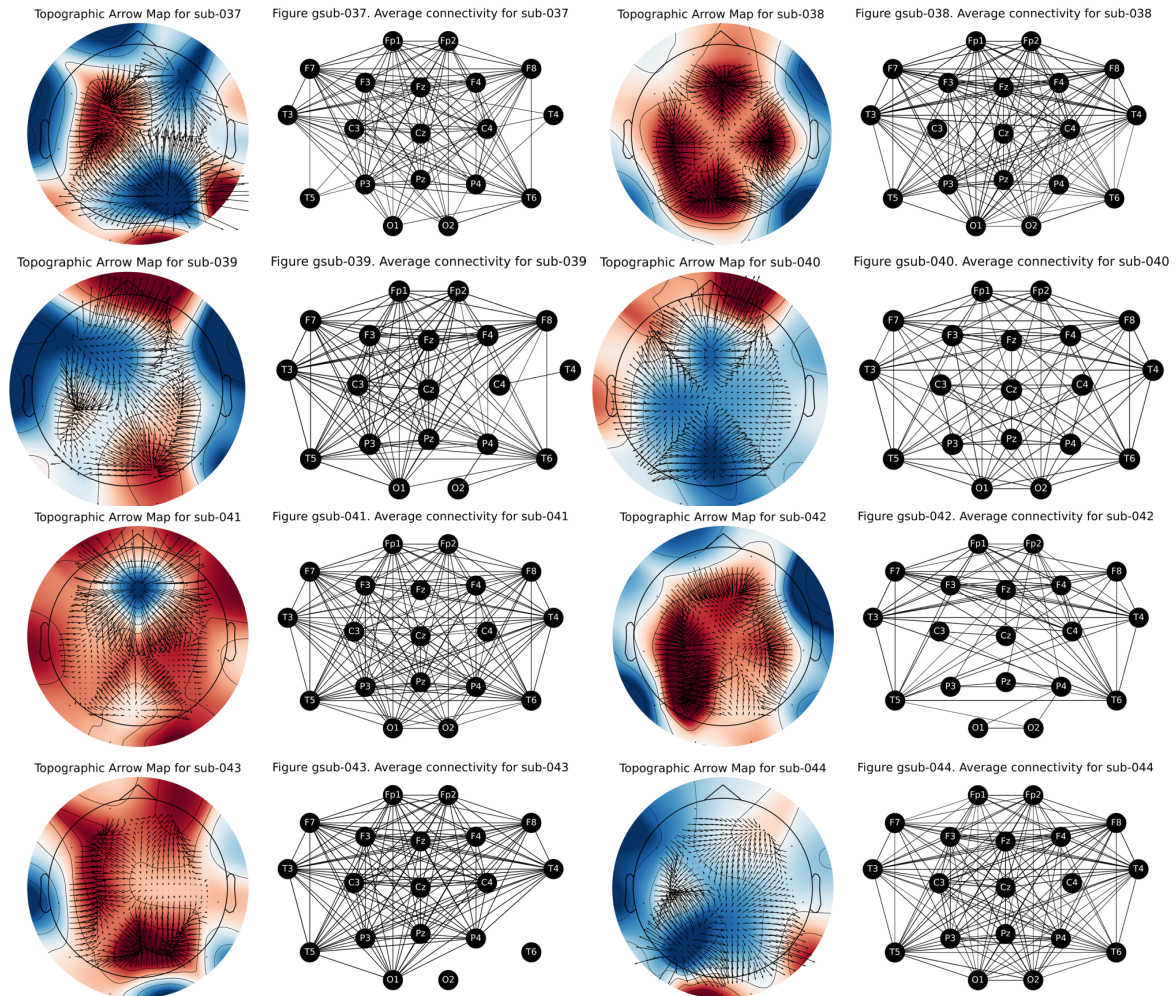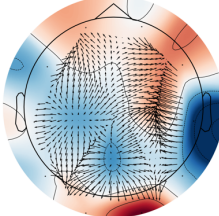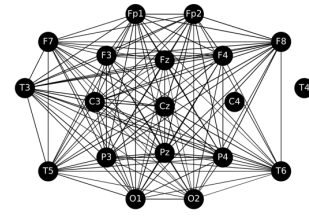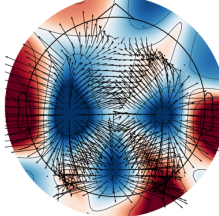
Topographic Arrow Map for sub-025

Figure gsub-025. Average connectivity for sub-025
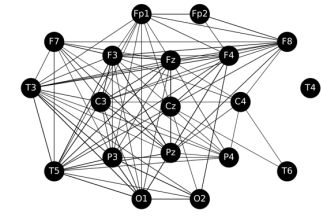
Topographic Arrow Map for sub-026

Figure gsub-026. Average connectivity for sub-026
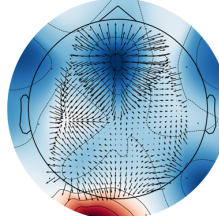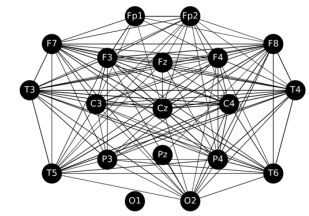
v

Topographic Arrow Map for sub-027

Figure gsub-027. Average connectivity for sub-027
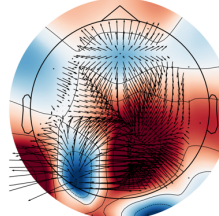
Topographic Arrow Map for sub-028

Figure gsub-028. Average connectivity for sub-028

Topographic Arrow Map for sub-029

Figure gsub-029. Average connectivity for sub-029

Amplitude (μV)

Control (AD Dataset)

Topographic Arrow Map for sub-037

Figure gsub-037. Average connectivity for sub-037
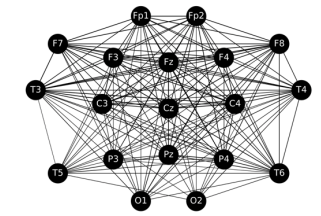
Topographic Arrow Map for sub-038

Figure gsub-038. Average connectivity for sub-038
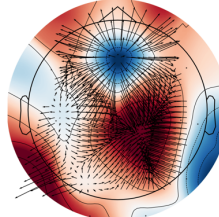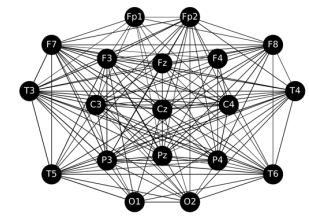
Topographic Arrow Map for sub-039

Figure gsub-039. Average connectivity for sub-039

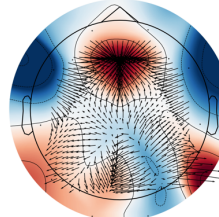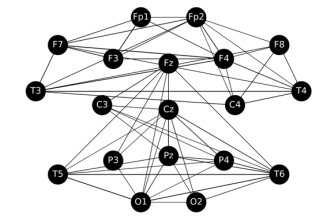Topographic Arrow Map for sub-040

Figure gsub-040. Average connectivity for sub-040
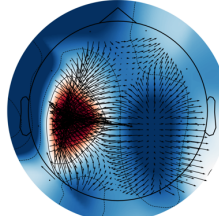
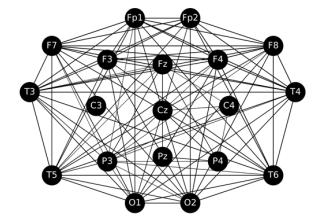Topographic Arrow Map for sub-041

Figure gsub-041. Average connectivity for sub-041
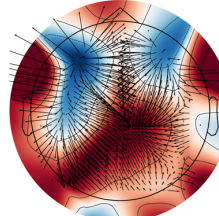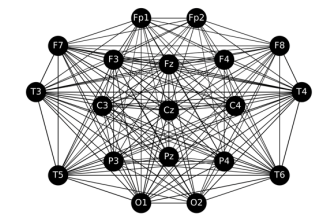
Topographic Arrow Map for sub-042

Figure gsub-042. Average connectivity for sub-042
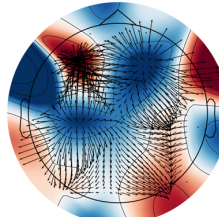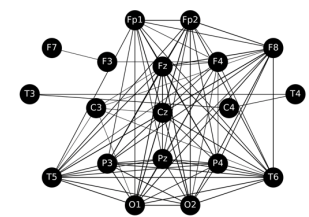
Topographic Arrow Map for sub-043

Figure gsub-043. Average connectivity for sub-043
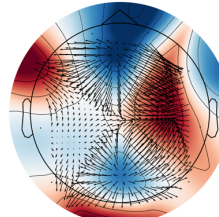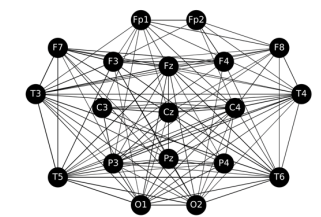
Topographic Arrow Map for sub-044

Figure gsub-044. Average connectivity for sub-044

Topographic Arrow Map for sub-045

Figure gsub-045. Average connectivity for sub-045

Topographic Arrow Map for sub-046

Figure gsub-046. Average connectivity for sub-046

Topographic Arrow Map for sub-047
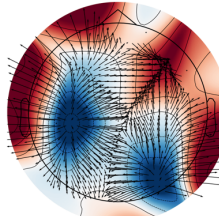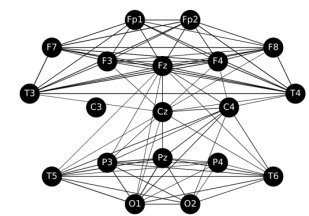
Figure gsub-047. Average connectivity for sub-047

Topographic Arrow Map for sub-048

Figure gsub-048. Average connectivity for sub-048

Topographic Arrow Map for sub-049

Figure gsub-049. Average connectivity for sub-049

Topographic Arrow Map for sub-050

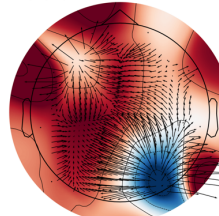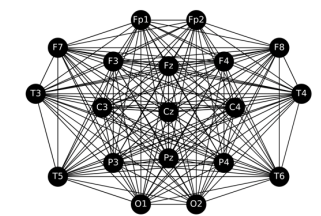Figure gsub-050. Average connectivity for sub-050

Topographic Arrow Map for sub-051

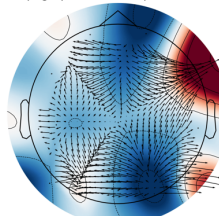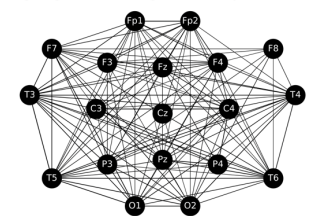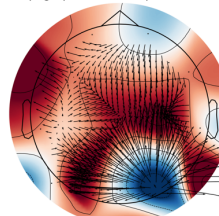Figure gsub-051. Average connectivity for sub-051

Topographic Arrow Map for sub-052

Figure gsub-052. Average connectivity for sub-052

Topographic Arrow Map for sub-053
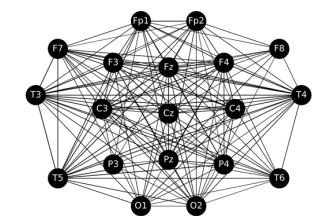
Figure gsub-053. Average connectivity for sub-053

Topographic Arrow Map for sub-054

Figure gsub-054. Average connectivity for sub-054

Topographic Arrow Map for sub-055
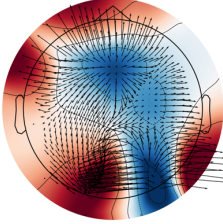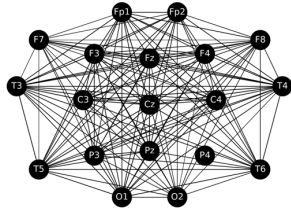
Figure gsub-055. Average connectivity for sub-055
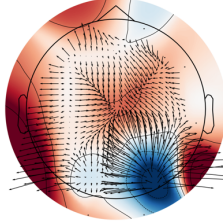
Topographic Arrow Map for sub-056

Figure gsub-056. Average connectivity for sub-056

Topographic Arrow Map for sub-057

Figure gsub-057. Average connectivity for sub-057

Topographic Arrow Map for sub-058

Figure gsub-058. Average connectivity for sub-058

Topographic Arrow Map for sub-059

Figure gsub-059. Average connectivity for sub-059
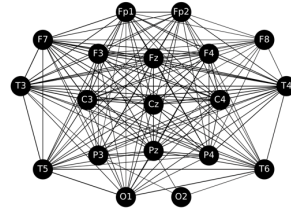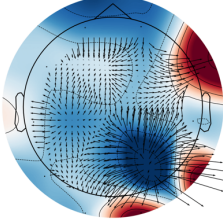
Topographic Arrow Map for sub-060

Figure gsub-060. Average connectivity for sub-060
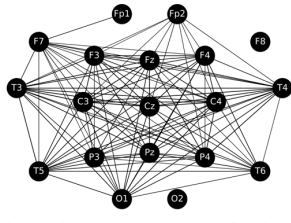
Topographic Arrow Map for sub-061

Figure gsub-061. Average connectivity for sub-061
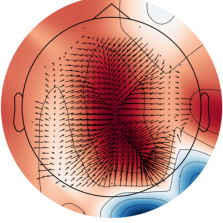
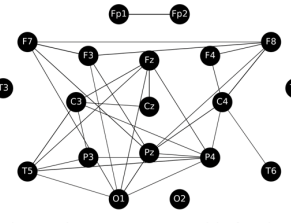Topographic Arrow Map for sub-062

Figure gsub-062. Average connectivity for sub-062
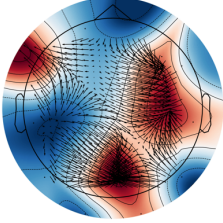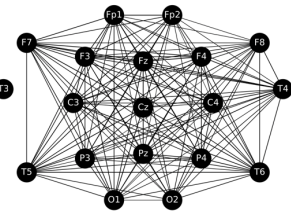
Topographic Arrow Map for sub-063

Figure gsub-063. Average connectivity for sub-063
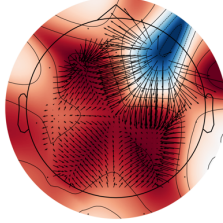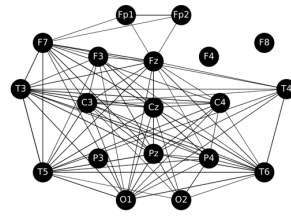
Topographic Arrow Map for sub-064

Figure gsub-064. Average connectivity for sub-064
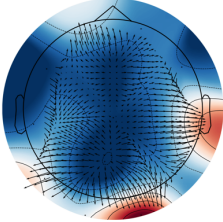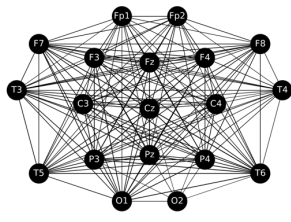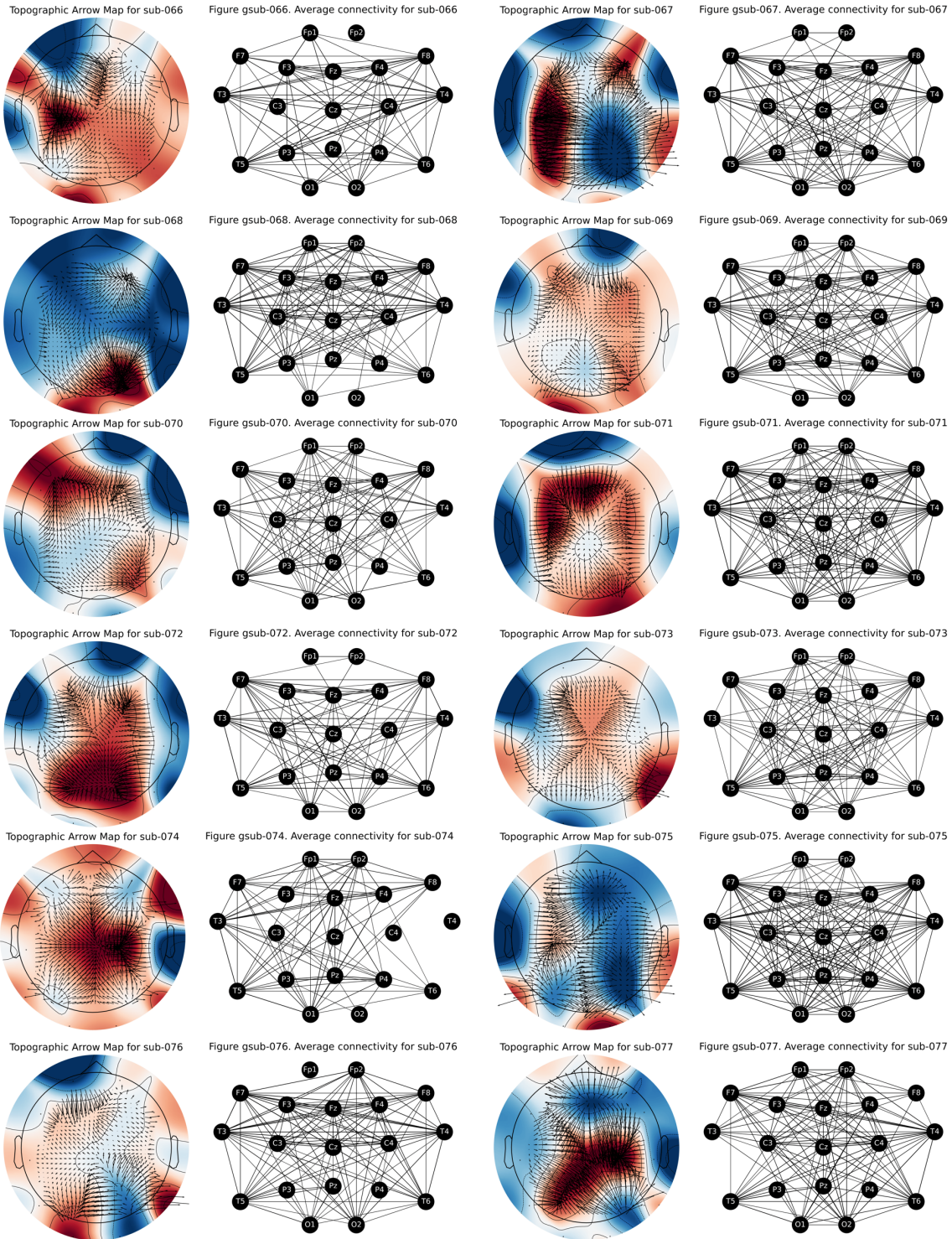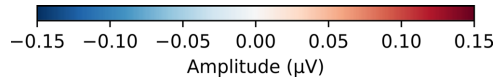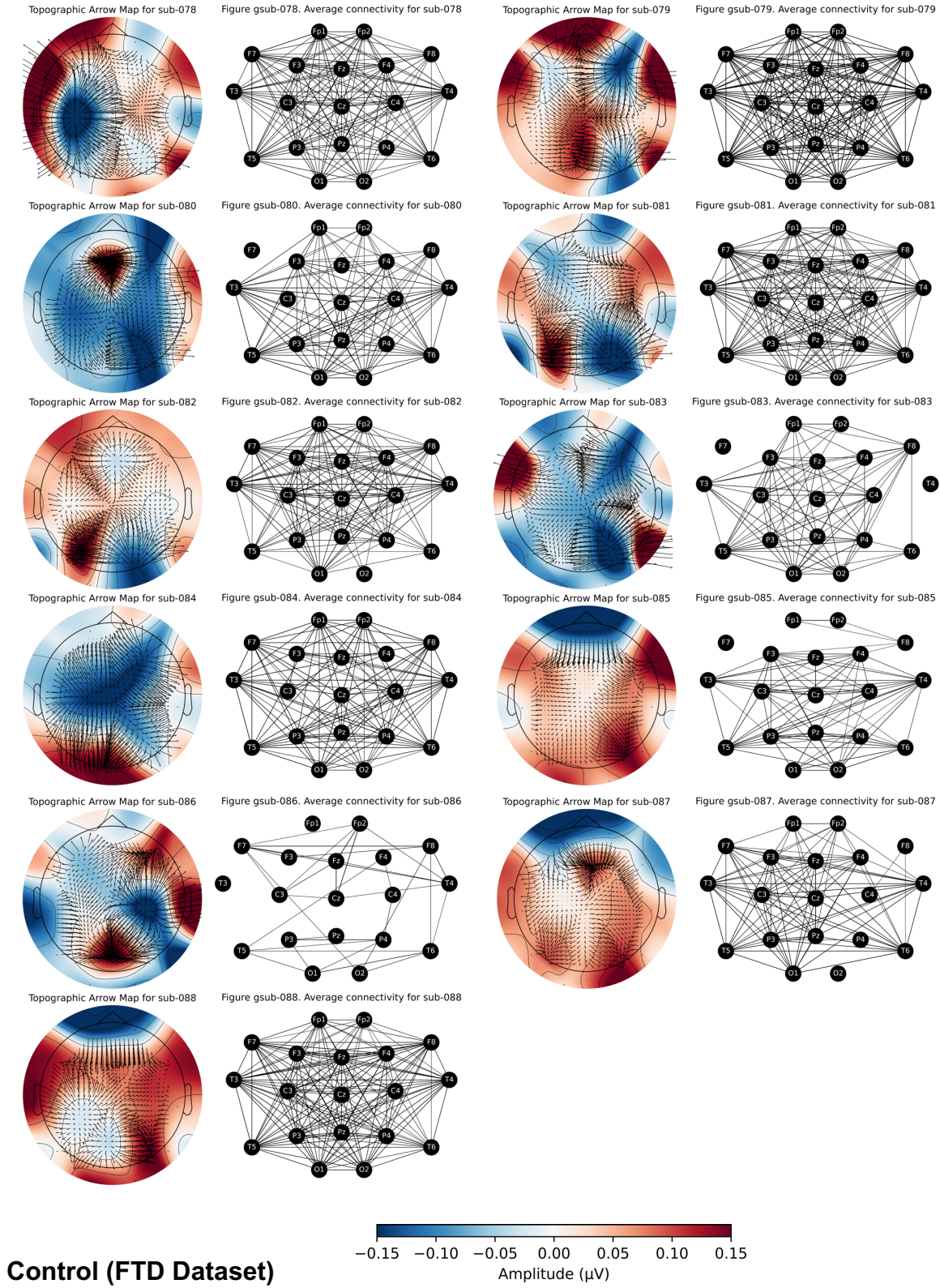
Topographic Arrow Map for sub-065

Figure gsub-065. Average connectivity for sub-065

Frontotemporal Dementia

Topographic Arrow Map for sub-066

Figure gsub-066. Average connectivity for sub-066
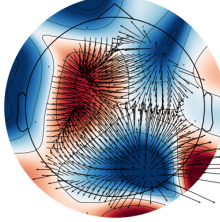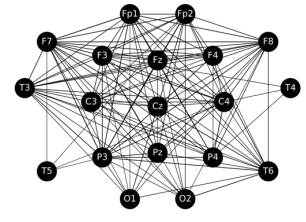
Topographic Arrow Map for sub-067

Figure gsub-067. Average connectivity for sub-067

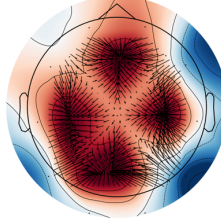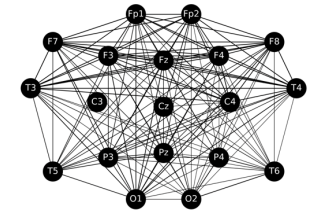Topographic Arrow Map for sub-068

Figure gsub-068. Average connectivity for sub-068

Topographic Arrow Map for sub-069

Figure gsub-069. Average connectivity for sub-069

Topographic Arrow Map for sub-070

Figure gsub-070. Average connectivity for sub-070

Topographic Arrow Map for sub-071

Figure gsub-071. Average connectivity for sub-071

Topographic Arrow Map for sub-072

Figure gsub-072. Average connectivity for sub-072

Topographic Arrow Map for sub-073

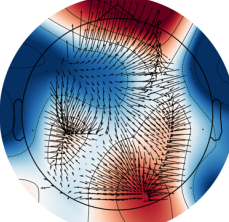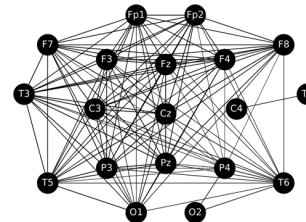Figure gsub-073. Average connectivity for sub-073
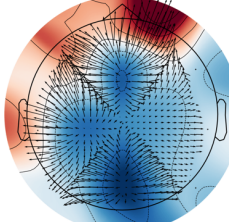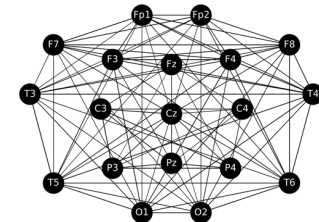
Topographic Arrow Map for sub-074

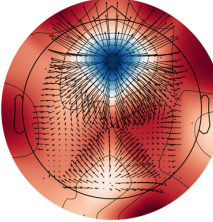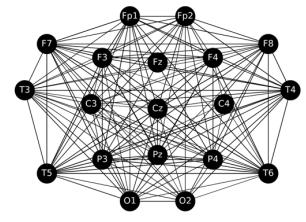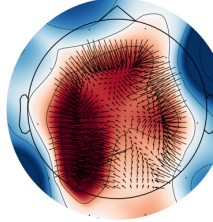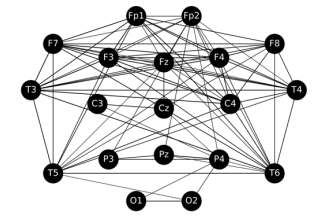Figure gsub-074. Average connectivity for sub-074

Topographic Arrow Map for sub-075

Figure gsub-075. Average connectivity for sub-075

Topographic Arrow Map for sub-076

Figure gsub-076. Average connectivity for sub-076

Topographic Arrow Map for sub-077

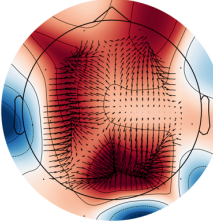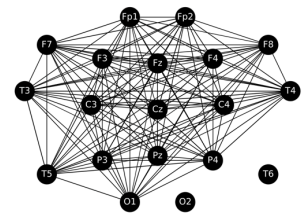Figure gsub-077. Average connectivity for sub-077

Topographic Arrow Map for sub-078 | Figure gsub-078. Average connectivity for sub-078
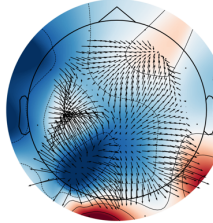Topographic Arrow Map for sub-079 | Figure gsub-079. Average connectivity for sub-079
Topographic Arrow Map for sub-080 | Figure gsub-080. Average connectivity for sub-080
Topographic Arrow Map for sub-081 | Figure gsub-081. Average connectivity for sub-081
Topographic Arrow Map for sub-082 | Figure gsub-082. Average connectivity for sub-082
Topographic Arrow Map for sub-083 | Figure gsub-083. Average connectivity for sub-083
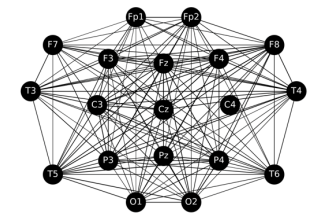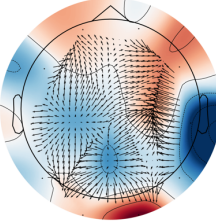Topographic Arrow Map for sub-084 | Figure gsub-084. Average connectivity for sub-084
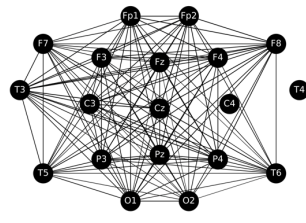Topographic Arrow Map for sub-085 | Figure gsub-085. Average connectivity for sub-085
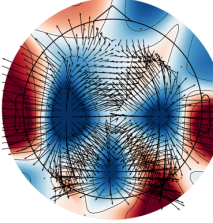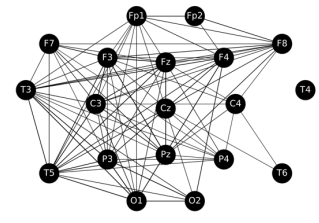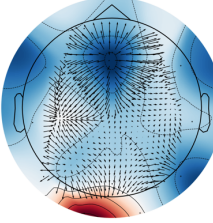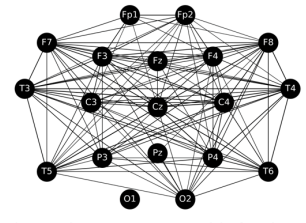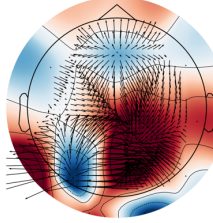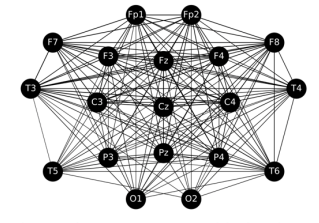Topographic Arrow Map for sub-086 | Figure gsub-086. Average connectivity for sub-086
Topographic Arrow Map for sub-087 | Figure gsub-087. Average connectivity for sub-087
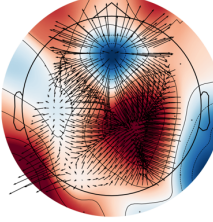Topographic Arrow Map for sub-088 | Figure gsub-088. Average connectivity for sub-088

Control (FTD Dataset)

Amplitude (µV)

X

Topographic Arrow Map for sub-037

Figure gsub-037. Average connectivity for sub-037

Topographic Arrow Map for sub-038

Figure gsub-038. Average connectivity for sub-038
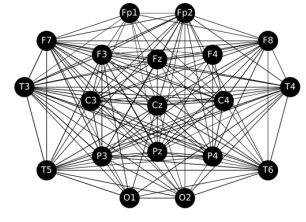

Topographic Arrow Map for sub-039

Figure gsub-039. Average connectivity for sub-039
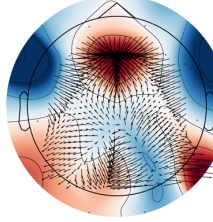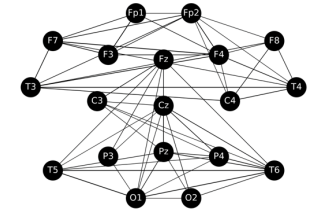

Topographic Arrow Map for sub-040

Figure gsub-040. Average connectivity for sub-040

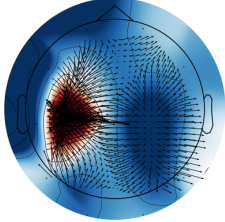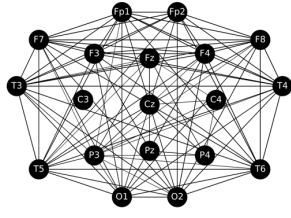
Topographic Arrow Map for sub-041

Figure gsub-041. Average connectivity for sub-041

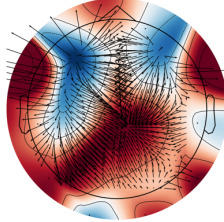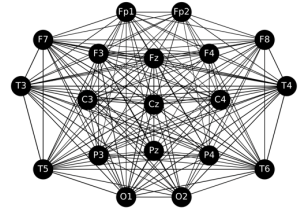Topographic Arrow Map for sub-042

Figure gsub-042. Average connectivity for sub-042
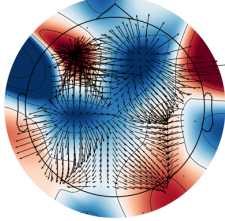

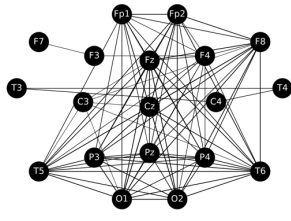Topographic Arrow Map for sub-043

Figure gsub-043. Average connectivity for sub-043
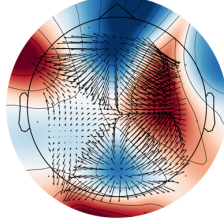

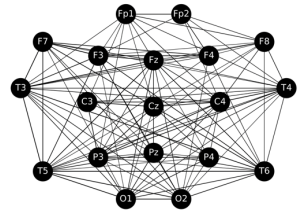Topographic Arrow Map for sub-044

Figure gsub-044. Average connectivity for sub-044

Topographic Arrow Map for sub-045

Figure gsub-045. Average connectivity for sub-045

Topographic Arrow Map for sub-046

Figure gsub-046. Average connectivity for sub-046

Topographic Arrow Map for sub-047
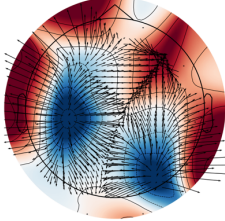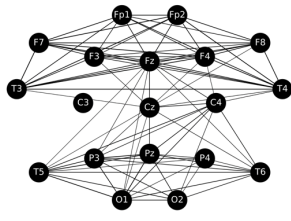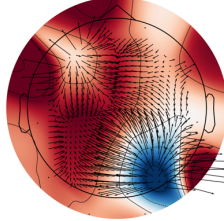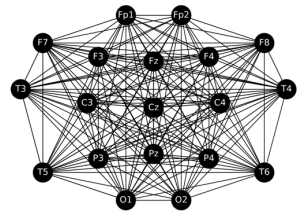

Figure gsub-047. Average connectivity for sub-047

Topographic Arrow Map for sub-048

Figure gsub-048. Average connectivity for sub-048

Topographic Arrow Map for sub-049

Figure gsub-049. Average connectivity for sub-049

Topographic Arrow Map for sub-050

Figure gsub-050. Average connectivity for sub-050

Topographic Arrow Map for sub-051

Figure gsub-051. Average connectivity for sub-051
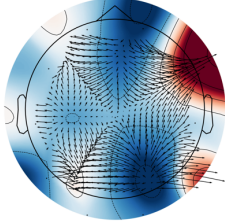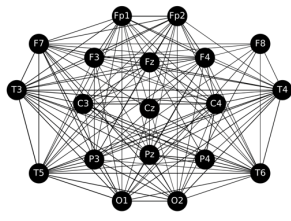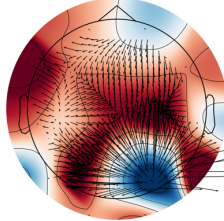

Topographic Arrow Map for sub-052
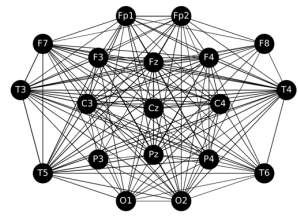

Figure gsub-052. Average connectivity for sub-052

Topographic Arrow Map for sub-053

Figure gsub-053. Average connectivity for sub-053

Topographic Arrow Map for sub-054
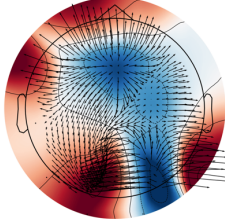

Figure gsub-054. Average connectivity for sub-054

Topographic Arrow Map for sub-055

Figure gsub-055. Average connectivity for sub-055

Topographic Arrow Map for sub-056

Figure gsub-056. Average connectivity for sub-056

Topographic Arrow Map for sub-057

Figure gsub-057. Average connectivity for sub-057

Topographic Arrow Map for sub-058

Figure gsub-058. Average connectivity for sub-058

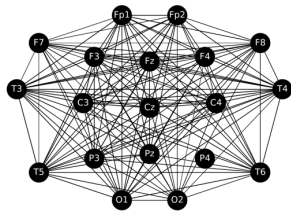Topographic Arrow Map for sub-059

Figure gsub-059. Average connectivity for sub-059
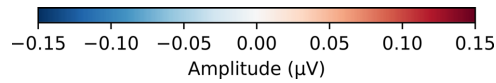
Parkinson's Disease

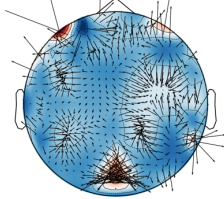Figure 1001. Average Topographic Arrow Map.
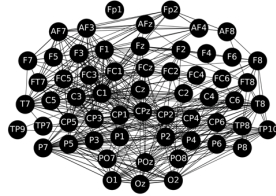
Figure gPD1001. Average connectivity.
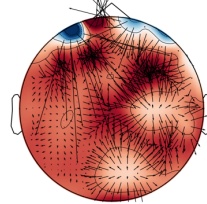
Figure 1021. Average Topographic Arrow Map.

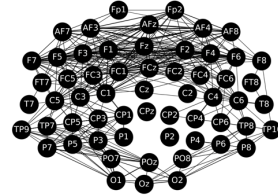Figure gPD1021. Average connectivity.
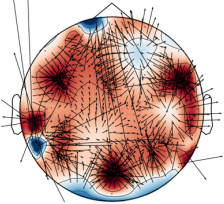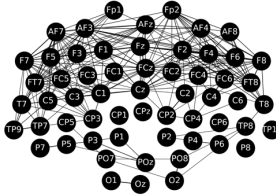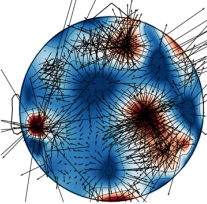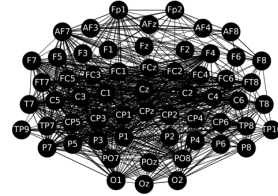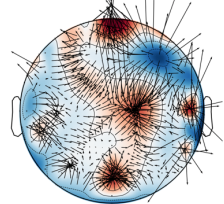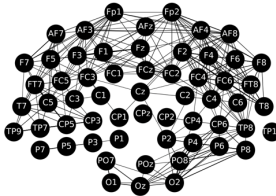
Figure 1031. Average Topographic Arrow Map.

Figure gPD1031. Average connectivity.

Figure 1061. Average Topographic Arrow Map.

Figure gPD1061. Average connectivity.

Figure 1091. Average Topographic Arrow Map.

Figure gPD1091. Average connectivity.
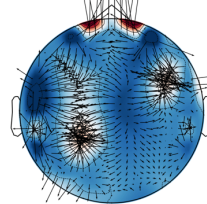
Figure 1101. Average Topographic Arrow Map.

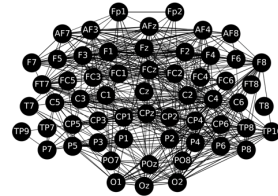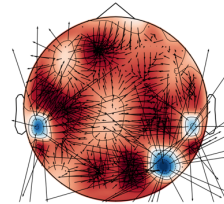Figure gPD1101. Average connectivity.

Figure 1151. Average Topographic Arrow Map.
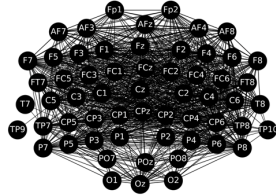
Figure gPD1151. Average connectivity.

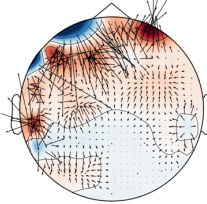Figure 1201. Average Topographic Arrow Map.
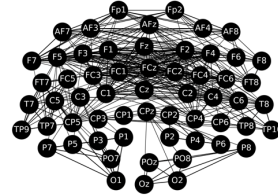
Figure gPD1201. Average connectivity.

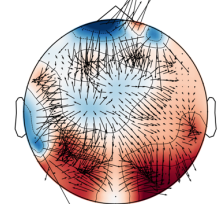Figure 1251. Average Topographic Arrow Map.
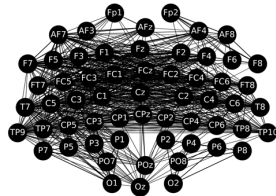
Figure gPD1251. Average connectivity.
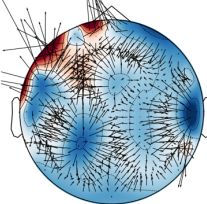
Figure 1261. Average Topographic Arrow Map.

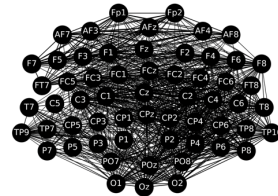Figure gPD1261. Average connectivity.
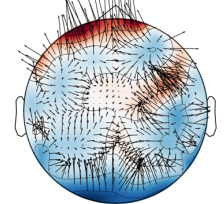
Figure 1311. Average Topographic Arrow Map.

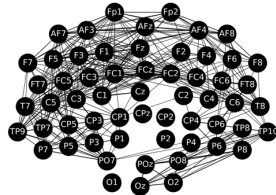Figure gPD1311. Average connectivity.

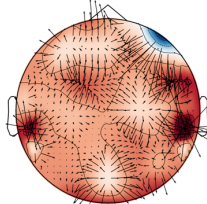Figure 1571. Average Topographic Arrow Map.

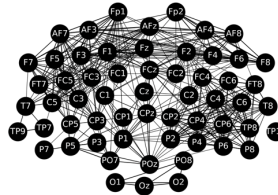Figure gPD1571. Average connectivity.
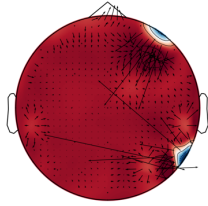
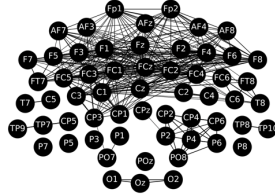Figure 1661. Average Topographic Arrow Map.

Figure gPD1661. Average connectivity.

Figure 1681. Average Topographic Arrow Map.

Figure gPD1681. Average connectivity.
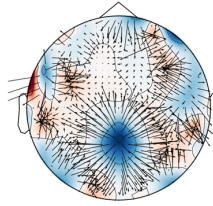
Amplitude (µV)
−0.15 −0.10 −0.05 0.00 0.05 0.10 0.15

Control (PD Dataset)

Figure 1021. Average Topographic Arrow Map.

Figure gControl1021. Average connectivity.

Figure 1041. Average Topographic Arrow Map.

Figure gControl1041. Average connectivity.

Figure 1061. Average Topographic Arrow Map.
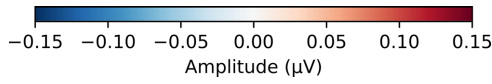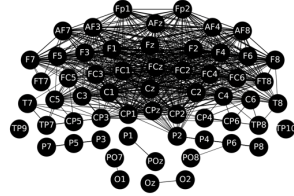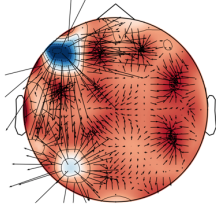
Figure gControl1061. Average connectivity.
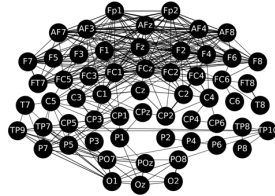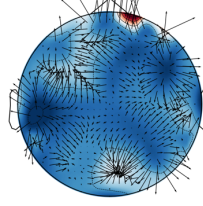
Figure 1081. Average Topographic Arrow Map.

Figure gControl1081. Average connectivity.

Figure 1101. Average Topographic Arrow Map.

Figure gControl1101. Average connectivity.

Figure 1111. Average Topographic Arrow Map.

Figure gControl1111. Average connectivity.

Figure 1191. Average Topographic Arrow Map.
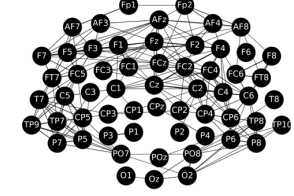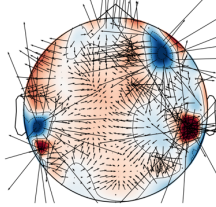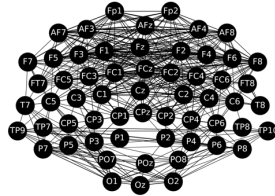
Figure gControl1191. Average connectivity.

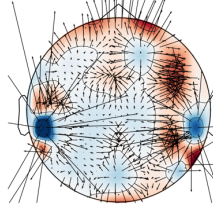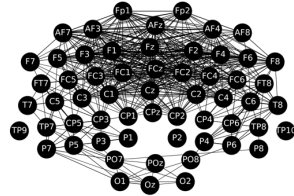Figure 1201. Average Topographic Arrow Map.

Figure gControl1201. Average connectivity.

Figure 1211. Average Topographic Arrow Map.

Figure gControl1211. Average connectivity.

Figure 1231. Average Topographic Arrow Map.

Figure gControl1231. Average connectivity.

Figure 1291. Average Topographic Arrow Map.

Figure gControl1291. Average connectivity.

Figure 1351. Average Topographic Arrow Map.

Figure gControl1351. Average connectivity.
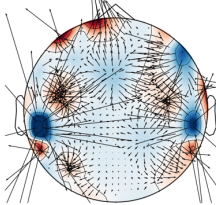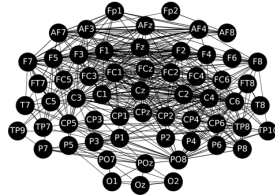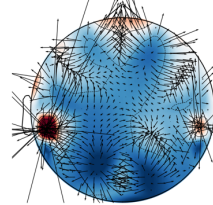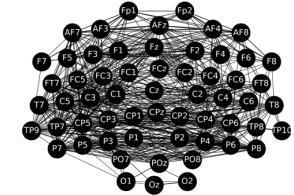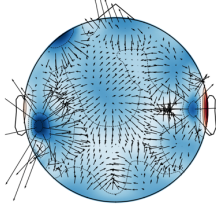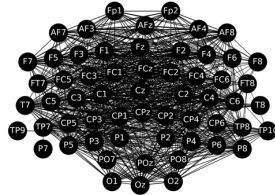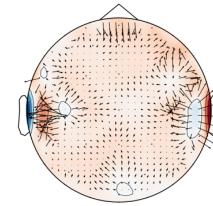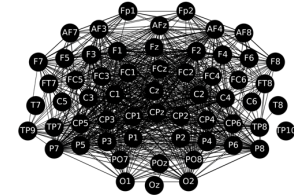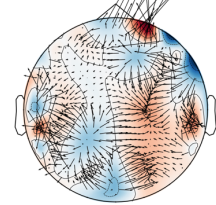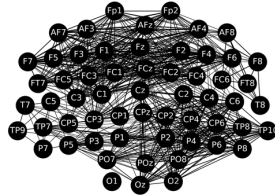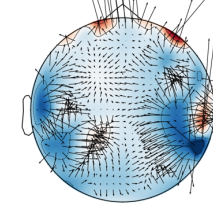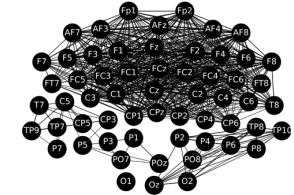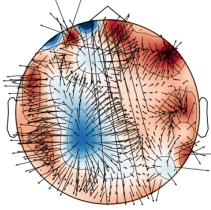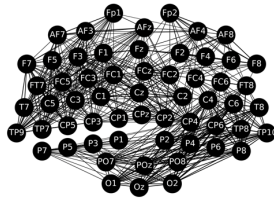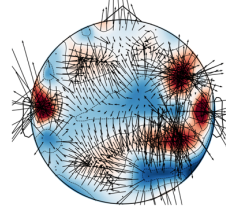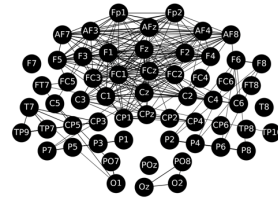
Figure 1381. Average Topographic Arrow Map.
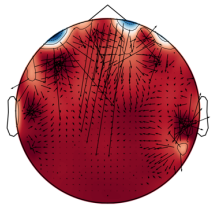
Figure gControl1381. Average connectivity.
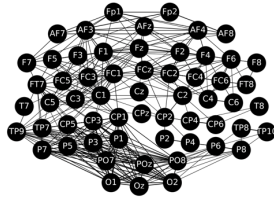
Figure 1411. Average Topographic Arrow Map.
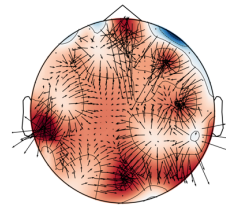
Figure gControl1411. Average connectivity.
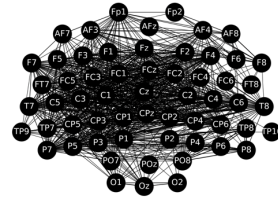
Results

Schizophrenia: 96% accuracy using channels F7 and Fz.

	Precision	Recall	F1-Score	Support
Control	0.93	1.00	0.97	14
PS	1.00	0.93	0.96	14
Accuracy			0.96	28
Macro Avg	0.97	0.96	0.96	28
Weighted Avg	0.97	0.96	0.96	28

Confusion Matrix:

[[14 0]
[1 13]]

Alzheimer's Disease: 97% accuracy using channels O2 and Cz.

	Precision	Recall	F1-Score	Support
Control	1.0	0.93	0.96	29
AD	0.94	1.0	0.97	29
Accuracy			0.97	58
Macro Avg	0.97	0.97	0.97	58
Weighted Avg	0.97	0.97	0.97	58

Confusion Matrix:

[[27 2]
[0 29]]

Frontotemporal Dementia: 96% accuracy using channels F7 and F3.

	Precision	Recall	F1-Score	Support
Control	1.0	0.91	0.95	23
FTD	0.92	1.0	0.96	23
Accuracy			0.96	46
Macro Avg	0.96	0.96	0.96	46
Weighted Avg	0.96	0.96	0.96	46

The Confusion Matrix revealed:
$$[[21\ 2]$$
$$[\ 0\ 23]]$$

Parkinson's Disease: 96% accuracy using channels Fz and T8.

	Precision	Recall	F1-Score	Support
Control	1.0	0.93	0.96	14
PD	0.93	1.0	0.97	14
Accuracy			0.96	28
Macro Avg	0.97	0.96	0.96	28
Weighted Avg	0.97	0.96	0.96	28

Confusion Matrix:
$$[[13\ 1]$$
$$[\ 0\ 14]]$$